

ABSTRACT

A device for removing lead sulfate, wherein: using a positive voltage E (v) of a lead-acid battery as a reference, as shown in Fig. 1, spike-shaped voltage pulses (of duration of $1 \mu s$ or less) pointing in a negative direction from the positive voltage E (v) are continuously applied between a positive electrode and a negative electrode of the lead-acid battery, to thereby pulverize, without damage to the electrodes, non-conducting crystals - hereinafter referred to as lead sulfate ($PbSO_4$) - largely built up on the electrode surfaces of the lead-acid battery, gradually, starting from a point where the crystals on the projecting crystal surfaces are spaced apart from each other by the smallest distance between the positive and negative electrodes, thus returning the pulverized lead sulfate ($PbSO_4$) crystals to dilute sulfuric acid, followed by charging the battery to thereby dissociate the pulverized lead sulfate ($PbSO_4$) crystals into Pb^+ and SO_4^- in the dilute sulfuric acid, which then return to the respective electrodes to thereby recondition the lead-acid battery.

The device comprises: a reverse connection protection circuit; a voltage detection circuit; a reference-voltage generating circuit; a voltage comparator circuit; an operation/non-operation switching circuit; an oscillating circuit; an amplifier circuit; a spike-shaped voltage pulse generating circuit for generating spike-shaped voltage

pulses of a short duration (T_b) of 1 μ s or less; a wave shaping circuit; and an operation indicator which is operated only by pressing an operation check switch.